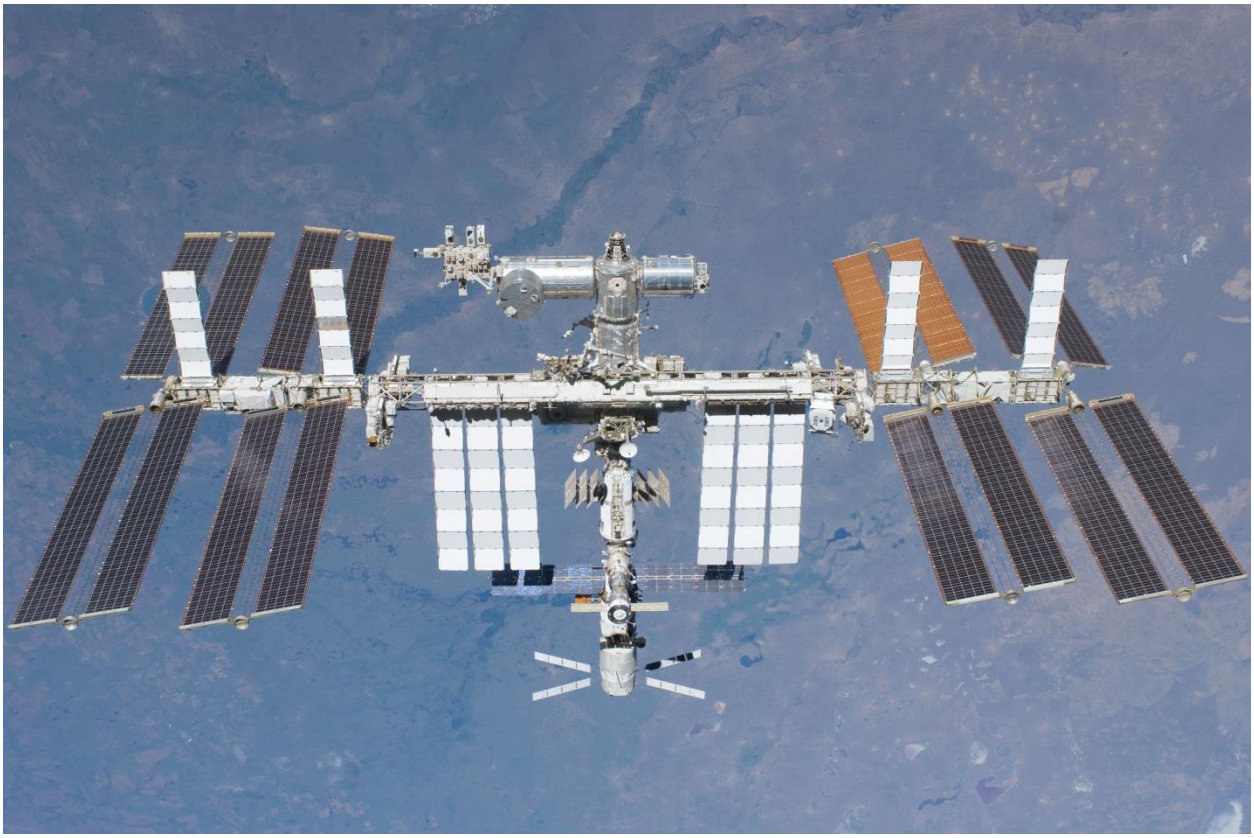
International Space Station Utilization Statistics Expeditions 0-40

December 1998 – September 2014



10 March 2015

MCB approved July 2015

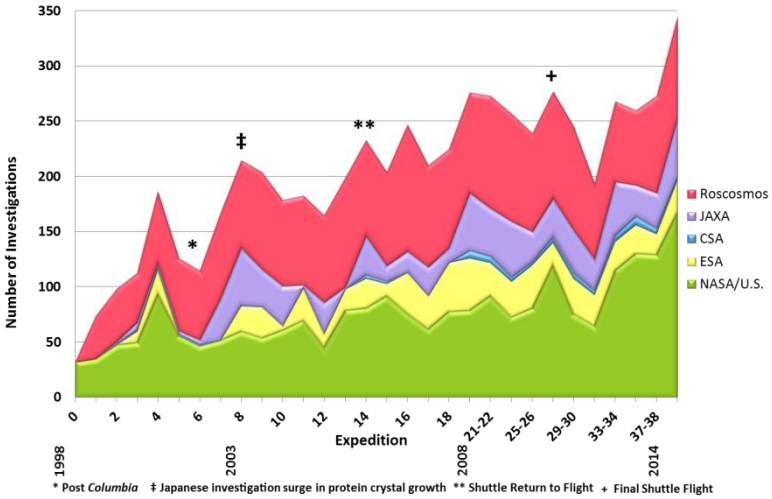
Number of Investigations Performed on the International Space Station

The information below provides an overview of ISS utilization up to the end of **September 2014**. An Expedition pair reflects the 6-month period used by the ISS Program for planning and execution of its activities. The utilization reflects activities of all of the ISS International Partners: CSA, ESA, JAXA, NASA, and Roscosmos. An investigation is defined as a set of activities and measurements (observations) designed to test a scientific hypothesis, related set of hypotheses, or set of technology validation objectives. Investigators include the principle investigator(s) and co-investigator(s) that are working to achieve the objective of the investigation.

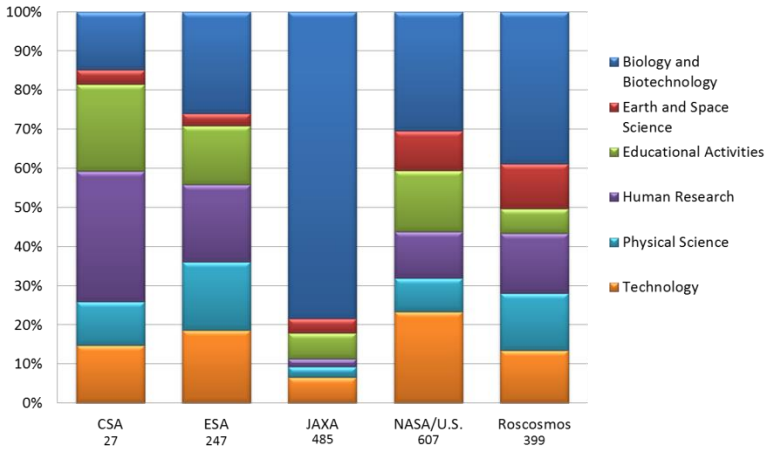
	ISS Expeditions 37/38 Sept. 2013 – Mar. 2014	ISS Expeditions 39/40 Mar. 2014 – Sept. 2014	ISS Expeditions 0-40 Dec. 1998 – Sept. 2014
Number of Investigations	273	346	1765
New Investigations	50	109	-
Completed/Permanent Investigations	37	89	1237
Number of Investigators with Research on the ISS	651	756	2484
Countries/Areas with ISS Investigations	48	38	83

Number of Investigators with Research on the ISS and Countries per Expedition
December 1998 - September 2014

Research and Technology Investigations per Expedition
December 1998 - September 2014

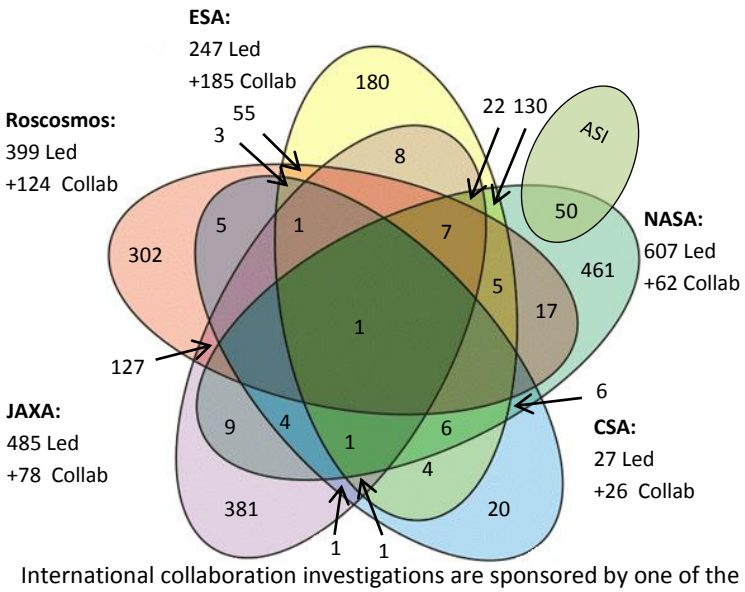


Research Discipline of ISS Investigations By Partner Agency:
Expeditions 0-40
December 1998 - September 2014

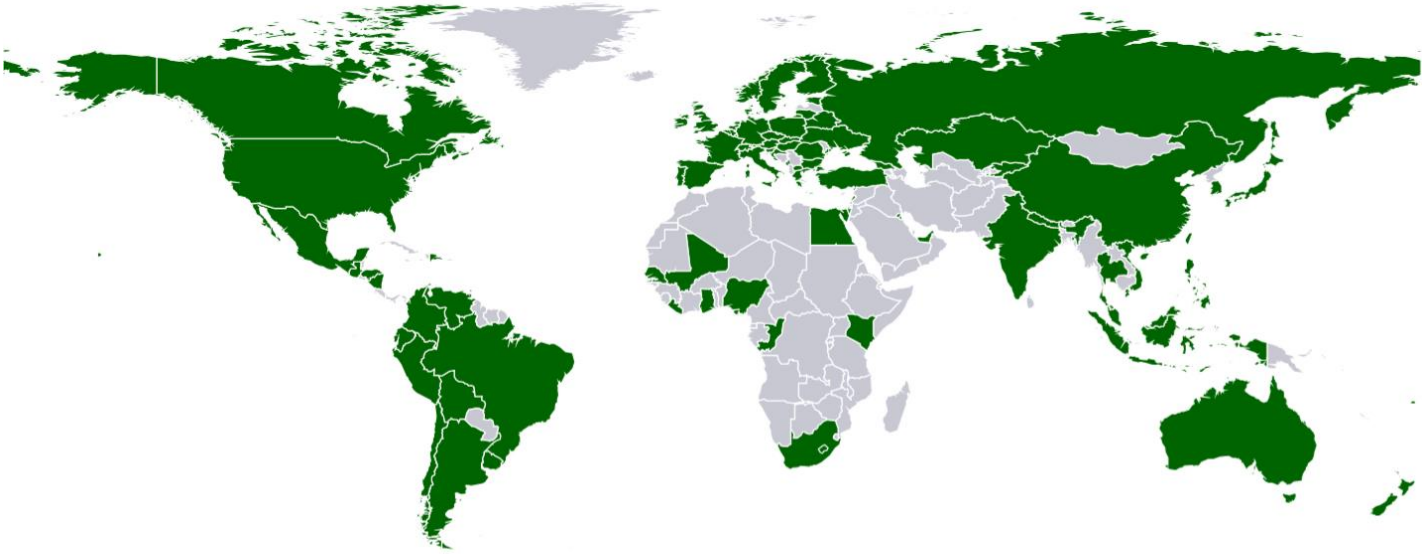


NASA utilization includes investigations by the Italian Space Agency (ASI), an ISS Participant Agency.

ISS Benefits Increased Through International Collaboration
Expeditions 0-40
December 1998 – September 2014



International collaboration investigations are sponsored by one of the ISS Partners and include scientists from other countries.
Ellipses show the intersection of Partner collaborations and counts show the increased number of investigations through international collaboration from the point of view of each Partner.



83 highlighted countries and areas have participated in ISS Research and Education Activities.

Research Resources

Resources for the ISS are often described as upmass (mass of material brought to the ISS), downmass (mass of material returned from ISS) and crewtime (amount of time crew dedicates to an activity).

Research Resources	ISS Expeditions 37/38 Sept. 2013 – Mar. 2014	ISS Expeditions 39/40 Mar. 2014 – Sept. 2014	ISS Expeditions 0-40 Dec. 1998 – Sept. 2014
Upmass	740 kg	2141 kg	52,742 kg
Downmass	38 kg	763 kg	12,743 kg
Crew time	1,711 hrs	1,898 hrs	23,765 hrs

Number of Current and Future Investigations on the International Space Station

The investigations statistics represented below reflect research planned for Expeditions 41/42 and 43/44. The numbers of investigations actually performed can only be reported after completion of the expeditions.

	ISS Expeditions 41/42 Sept. 2014 – Mar. 2015	ISS Expeditions 43/44* Mar. 2015 – Sept. 2015	ISS Expeditions 41-44* Sept. 2014 – Sept. 2015
Total Investigations	365	332	451
New Investigations	107	87	194
Number of Investigators with Research on the ISS	896	813	1052
Countries/Areas with ISS Investigations	35	37	37

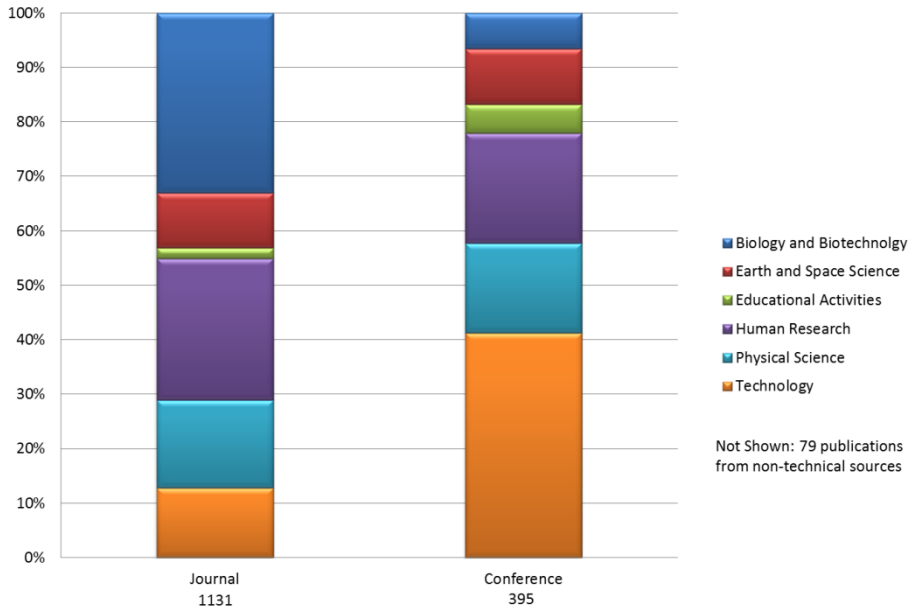
*Roscosmos data is preliminary

Top 20 Journals with ISS Results*
1. Nature
2. Proceedings of the National Academy of Sciences of the United States of America
3. Science
4. PLOS ONE
5. Physical Review Letters
6. Journal of Biological Chemistry
7. Journal of Neuroscience
8. Journal of Geophysical Research
9. Chemical Communications +
10. Physical Review D
11. Advanced Materials
12. Geophysical Research Letters
13. Langmuir
14. Journal of Chemical Physics
15. Chemistry – A European Journal +
16. Physical Review E
17. NeuroImage
18. The Astrophysical Journal
19. Journal of Physical Chemistry B
20. Oncogene

*Journals are listed in *Eigenfactor*® order. *Eigenfactor*® is an estimate of the percentage of time users spend with a journal, with citations from influential journals ranked higher.

+Denotes new Journal to top 20 List since the Expeditions 0-38 report.

ISS Results Publications through January 2015



International Space Station Benefits for Humanity 2015:

Human Health

- Study of T-cells – white blood cells that are key elements of the body's immune system and response to infection and disease – allow scientists to better understand effects of HIV, rheumatoid arthritis and aging.
- Technology developed to study dusty plasma - mixture of small particles in plasma's charged gases – knowledge gained from ISS research has shown potential benefits in disinfecting wounds, neutralizing bacteria and improved wound healing time.
- Technology developed to study the effects of microgravity on the human body is also used for "dry immersion" treatment aiding in the relaxation of muscles, increases in immunity, elimination of edema and normalization of blood pressure.
- Astronauts' adaptation to motion in weightlessness helps researchers develop rehabilitation strategies for patients with brain injuries and neurological disorders.

Earth Observation and Disaster Response

- The ISS is an Earth Observations platform providing researchers and disaster response teams imagery collected from an assortment of instruments from handheld equipment to Hyperspectral imaging to High-Definition cameras.

Innovative Technology

- Recent discoveries on the ISS in the area of combustion will help with the development of new technology to reduce pollution and increase gas mileage in internal combustion engines.
- Global transmission services mounted on the ISS transmit Coordinated Universal Time (UTC) that can be picked up by a variety of electronics several times per day. This service could be used to locate stolen items such as cars, credit cards.
- Continued studies of colloids behavior in pulsed magnetic fields will lead to improved braking and suspension systems, and shows promise for new nanomaterials for thermal barriers, energy harvesting and color displays.
- Technology demonstrations on ISS are proving that today's robotic technology can eventually repair, refuel and recover disabled satellites in geosynchronous Earth orbit.

Global Education

- The NASA published *Inspiring the Next Generation: International Space Station Education Opportunities and Accomplishments, 2000-2012*, showcases the educational activities associated with the ISS.

This is a product of the ISS Program Science Forum comprised of representatives from the ISS Partner Agencies: Canadian Space Agency (CSA), European Space Agency (ESA), Japan Aerospace Exploration Agency (JAXA), National Aeronautics and Space Administration (NASA) and the Federal Russian Space Agency (Roscosmos) and the ISS Participant Agency: Italian Space Agency (ASI).

Additional Resources:
ISS Research and Technology on the Web:
http://www.nasa.gov/iss-science/
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